ITEMS OF INTEREST.

VOL. V. PHILADELPHIA, MAY, 1883. No. 5.

Editorial.

WHAT IS THE STATUS OF OUR CALLING?

Is dentistry a profession? or is it a specialty of a profession? or is it a trade?

There have been recognized, almost from time immemorial, but three professions: Divinity, Law and Medicine; the first, having to do with man's spiritual interests, the second, with his social rights, and the third, with his bodily ailments. Each has been recognized and guarded by the laws of every civilized country, and each has maintained its own distinctiveness with much care and jealousy. Those who would intrude themselves unbidden are anathematized. They must come through the door officially provided, or not at all. For a man to assume to "preach" without being "ordained," to "plead" without being "admitted to the bar," or to "practice" without his "diploma," is considered "highly improper," and it is the constant endeavor of those already "titled" to see that it it is "highly impossible." "Quack! quack! quack!" is heard from their ranks, as though they were a flock of geese, whenever anyone approaches them from any unaccustomed direction.

And this has its beneficial effect. It is right that each profession maintain its dignity and efficiency, and see that those assuming to be of their number possess the requisite qualifications.

But more directly to the subject of our caption: What is the status of our calling? Is dentistry a profession, a specialty of a profession, or a trade? Let us consider them in their reverse order.

It certainly seems to be above that of a trade—"buying and selling for money;" more than "barter;" it is more than "mechanical employment." It must be, therefore, either a specialty of a profession, or a profession of itself.

If it is a specialty, it must belong to the profession of medicine, and we must become physicians in order to become dentists; for, in that

THE REGION OF PAIN NOT ALWAYS THE REGION OF DISEASE.

Physicians and dentists are frequently reminded that the region of pain is not necessarily the location of the disorder which produces the pain. Headache may be referable to disturbance of the stomach, and complaints of the stomach may be indicated by pain in muscles, nerves or organs quite remote. We were once called to prescribe for a painful toe, but we found the cause in the spine. Pain in the back may mean disorder of the kidneys, and ache between the shoulders may be the only pain pointing to a derangement of the liver. In females, how often both head and stomach are violently disturbed, and a dozen diseases simulated, by a disturbance of the uterus?

The dentist is often obliged to exercise much wisdom in diagnosing dental and facial diseases. A carious tooth may cause congestion of the brain, and yet a toothache may be a mere symptom of some disorder in another part of the body. Even where the cause is in a tooth, it may not be easy to determine, by the pain, in which tooth the disease is located. Sometime since, a lady persisted in our extracting a first lower bicuspid tooth, "it was aching awfully," though, from what she said, and a slight examination of the tooth, we were confident it did not ache at all, and that the trouble was in the nearest wisdom tooth. She was so indignant at our presuming to know better than she did where her trouble was, and we were both so confident, she left the office and employed a more pliable dentist. In three days she returned, saying, "Now, doctor, you may have your own way, for I have lost a good tooth without more than temporary relief; but I am still confident you were wrong; my trouble is in the tooth behind the one extracted." The first touch of our instrument on her wisdom tooth, however, caused her to exclaim, "That's the one after all; who would have believed it? Out with it, quickly." The reason of her mistake was that the disease of this wisdom tooth had caused inflammation along the line of the inferior dental nerve, distributed to the lower teeth. This emerges through the mental foramen of the lower jaw, situated near the end of the roots of the bicuspid teeth. Pain, due to the exposure of the pulp of the wisdom tooth, was located here because the swelling of the blood-vessel accompanying the nerve, was constricted by its being confined to this small, unyielding aperture. Even an upper tooth may take on pain when its corresponding tooth below is the suffering member, and vice versa. This cannot be so easily explained, as there is no close connection in the distribution of the upper and lower nerve, though in their minute arrangement, they may anastomose as they branch from their common bundle. Generally, especially in acute congestion of the blood-vessels of the pulp, the pain is located in the tooth, or still more

severely in its apex, where these vessels pass through its extremely small foramen.

Pain always means pressure upon a nerve, and when this is caused either by a congestion of the blood-vessels, or by obstruction in them, the pain is more acute in the hard parts which resist the necessary swelling, and not always where the real cause of these troubles is located. This distance between pain or irritation and disease is frequently exemplified in facial neuralgia, which is a symptomatic pain; the disease generally being in a tooth. Thus, also, the ear-ache or inflammation of the eyes may be caused by a carious tooth.

Irritation of the extremity of one branch of a nerve sometimes excites a sympathetic pain or irritation in the extremity of another branch of the same nerve, distributed to another part of the system. For instance, swallowing a piece of ice may produce pain over the brow. Eating too much honey, or drinking an excess of rich syrup of sugar or fruit will cause a dizziness of the brain simulating a slight drunkenness. Indigestion may induce irritation of the gastric branch of the pneumogastric nerve, manifested by spasmodic coughing, choking and other ailments of the glottis, or voice muscles, simulating croup, bronchitis, etc., but the cure of the glottis is a relief of the stomach. Teething may produce another species of coughing, by inducing irritation of the bronchial glands or bronchial tubes; or it may cause constipation, inflammation or diarrhœa of the bowels, or inflammation of the brain, or such a violent affection of the sympathetic nerves as to result in fits.

ARSENIC FOR THE PRESERVATION OF EXPOSED NERVES.

We discarded arsenic from our dental practice many years ago. When we ceased to destroy pulps, we had no farther use for it. We are astonished, therefore, to read in the dental journals the recommendation of its use by Dr. Bodecker, of New York, for the *preservation* of exposed pulps. When we first saw the paragraph, we thought it must be a mistake, and have looked for his contradiction, but it has passed from journal to journal till we conclude to call attention to what appears to us a singular absurdity, and what must prove to be an abortive treatment.

Dr. Bodecker, according to this statement, asserts: "It is practicable to destroy the peripheral [outer] portion of a tooth pulp with arsenious acid, and that the action of this agent, if continued only twenty-four hours, is peripheral only. If continued longer, it devitalizes the entire pulp." He states that it is possible in this way to destroy the pulp on the surface only, and that amputation of the devitalized portion may then be performed, with a saving of the remaining por-

tion of the organ. In the amputation, he goes a great deal below the line of demarcation, and into the healthy tissue beyond. He holds that the remaining portion of the pulp will perform its functions satisfactorily and permanently.

This looks to us like a vagary and an absurdity.

1st. It is inconsistent that a virulent poison like arsenic will act as the salvation of a tooth pulp, "if applied only twenty-four hours," and as its destroyer "if continued longer."

2d. We think the observation of everyone having experience in its use will contradict such a possibility. There are cases of the congestion of the pulp where the first application of arsenic will not, at once, devitalize it; the pulp seems to resist its action. But these cases are rare, and do not show that, therefore, arsenic preserves the vitality of the pulp. Its life continues in spite of the arsenic—but not long.

3d. The surgical process recommended, is an absurdity. One would suppose the pulp could be taken out and placed on the dissecting table for the convenience of the operator. But if we could see plainly our work, how are we to know where is "the line of demarkation" between the peripheral portion destroyed by the arsenic, and the part it is to save? Then, again, in cutting away this zone of destroyed pulp, Dr. Bodecker tells us to be sure to go "a great deal below this." Why? If this queer poison, "applied for only twenty-four hours," is death to the periphery and life to the center, why not divide where the action of his wonderfully discriminating agent divides life and death? Why go "a great deal below?" From the surface of the pulp quite to the center, is not far. How far, then, below "the line of demarkation ' toward the center shall we go to find the line of "amputation," and still have any portion left to take on healing and continue normal function? And why should the killing of the periphery be necessary for the prolongation of the life of the center? Then too, about this "twenty-four hours." How is it this proves to be the demarkation of time between salvation and destruction? When we used arsenic, though in very small doses, we often found the whole nerve dead in twenty-four hours.

It is sometimes said, "Show me the hand and I will give you the appearance of the whole body." So wonderfully does every part harmonize in its relation with all other parts of our bodies, that, if we are expert anatomists we can judge of the whole frame from the size and length of almost any of the bones.

Dr. George D. Sitherwood, of Bloomington, says:—I think plaster is the only suitable material for taking impressions. I have had failures with almost every other material, but very few with plaster.

Thoughts from the Profession.

THE PHENOMENA AND FORCES WHICH CONSTITUTE LIFE.

BY DR. J. F. SANBORN, TABOR, IOWA.

Digestion is but finely dividing the food eaten, and the reducing of it to a semi-fluid condition, so that it may be readily absorbed and passed into the general storehouse of nutritious matter—the blood. The results of the labors of the best original investigators, who study living matter with the highest powers of the microscope, show: 1st. That nothing that lives is alive in every part. 2d. That the substance of every living organism consists of three parts — first, pabulum; second, bioplasm; third, formed matter. Take the oyster for an illustration: there is within the living organism that which moves, acts, eats, digests and assimilates the pabulum, and throws off as formed matter that which makes the cell wall or shell. This cell is as much the result of vital action as is the living organism within, yet it is equally as dead as it is when you have polished and preserved it as a conch curiosity. The shell grows, but not in every part; the increase is only in the part next to the living animal.

"It is thus in every organic cell; there flows nutrient matter which is first changed to living matter, and then the living is thrown off as formed matter, to make the cell wall." In the center of the cell is the bioplast, which is the living germinal matter that is working this transformation. These bioplasts are so closely distributed throughout the organism, that there are over 11,000 to the cubic inch. "These bioplasts are the only living matter, so that only about 1-5 is really alive; the other 4-5 being formed matter, somewhat like the shell of the living oyster."

In human physiology, the nutrient matter must always be organic.

This physiological transformation of nutrient matter into living tissue is what chemistry can neither imitate nor explain; it is a vital process, and not a chemical one.

In animal vitality there are three vital actions that are mutually dependent on each other—brain-force, respiration and circulation, "but the greatest of these three is brain-force." Suspend the action of either of them but for a few moments, and vital action ceases. Notwithstanding the various complications and the multiplicity of actions that go to make up animal life, they are ruled, governed and controlled by brain-force. A Prince Gortschakoff, of Russia, Bismarck, of Germany, Lord Beaconsfield, of England, and Gambetta, of France, are

the men who dictate the policy of, and really govern, the Eastern world. Peter the Great, William the Conqueror and Napoleon the I, were the real heads of their respective governments, but, as a rule, but few of the crowned heads have sufficient mentality to be the real heads of their own governments. So in the vital domain, brain-force is the ruling power, crowned high over all the vital actions, and without it there is no action, either voluntary or involuntary. Whence, then, is the origin of this brain-force?

Let us see:

We have shown that "instability and unceasing change are the marked characteristics of vitality."

In order that this change may go on unceasingly, and supply, in quantity and quality sufficient to fill nature's demands, the air that we breathe, becomes one of the prime essentials.

We have shown that the air is atomic in its character, and not molecular; that is, the O. and N. are diffused through the space occupied by our atmosphere, but each is truly as pure and uncontaminated by the other as potatoes and apples are when placed together; you may take which you will without fear of taking the other. It is so with the atmosphere; the lungs can and do as readily take the amount of pure oxygen that the case demands, as you could of apples mixed in a measure with potatoes.

The air we breathe is composed of O. 1 part to 4 of N. They are both inhaled; the O. is absorbed, the carbonic acid gas is discharged from the venous blood, and is exhaled with the nitrogen. The O. is conveyed by the red blood-corpuscles, which are intermingled with the pabulum, and is carried through the heart, arteries and capillaries to every part of the body. The bioplasts appropriate the nutrient material to build up their respective tissues, and the oxygen becomes a part of the living structure. The O. is passed from within outward to the formed matter, which has been represented by the oyster-shell illustration. The O. unites with this matter, decomposing a portion of it, when it is removed by the blood-corpuscles as carbonic acid gas, and is conveyed in the veins to the lungs for elimination. Another portion is removed by the kidneys, and another by the lower bowels.

It will be seen that the O. acts on the formed matter, decomposing it as continuously as we breathe, sleeping or waking, from the first commencement of life until death. The building up of tissues is a *vital* act; the taking down is a *chemical* one, wherein the O. combines with the formed matter of the bioplasts, breaking down the proximate principles as they are found in it, oxidizing it as it would any other dead matter raised to a sufficiently high temperature; it is removed as any other foreign matter is, and if not promptly removed, formed matter acts as a poison, and becomes a primary cause of disease.

As previously shown, chemical affinity is a primary source of heat, and it is this chemical affinity of the O. uniting with the carbon of the tissues that causes animal heat; and as this action takes place in every part of the body, we find animal heat everywhere present.

It has also been shown that science teaches, and our observations with the galvanic battery demonstrate, that chemical affinity is also a source of galvanic electricity. This generation of galvanic electricity takes place continuously as the oxidation of formed matter goes on, just as truly as it does in the oxidation of zinc in the galvanic battery. It may be asked what becomes of it. Is it wasted, or is it conserved and utilized for some good purpose? Let us see.

There are two sets of nerves:

1st. The afferent, that convey impressions from the periphery, or extremities, to the center; and,

2d. The efferent nerves, that convey impressions from the center to the extremities.

This galvanic or vital electricity is gathered up and conveyed to the brain, where it becomes vitalized, and is afterward known as brain and nerve-force. If the breathing is suspended, the oxidation of tissue is suspended, and the development of vital electricity does not take place, and the brain deprived of its power, forthwith ceases to act. This cessation of vital action is death by suffocation.

During sickness, the build-up of tissue may not take place for many days, and yet recovery take place; but during life the break-down of tissue must and does take place, continuously, or death is the result.

We see that the build-up of tissue is essential to life, and we now see how the break-down is equally essential to vital action, as is the build-up, and wherein nature conserves all her means for the common good of the whole.

The dental art is eminently mechanical and manipulative in its practical application, and it has suffered and is suffering to-day a great deal more from the want of a mechanical education and training than from the want of more medical knowledge. There are innumerable failures in the practice of dentistry to-day, and who will presume to say that it is owing so much to the lack of a medical education as to the want of a better knowledge of mechanics and training in the proper use of tools? Some of our medically educated men have been good operators, but not all of them, by any means. A medical education will not make a good practical dentist, and those men who have been successful practitioners have not been such because of their medical course. It gave them many advantages, there can be no question, but it was not the thing they relied upon. Some have depended upon their medical attainments to give them respectability and success, and they have utterly failed.

B. LORD.

GLUCOSE AND DECAY OF THE TEETH.

BY DR. W. C. BARRETT, OF BUFFALO.

At the last Michigan Dental Association, Dr. Barrett said: Buffalo is the center and initial point of the glucose manufacture. I have been all through these manufactories; and I have examined the process, and I have examined it as thoroughly and critically as it was in my power to do. Every facility has been placed at my disposal. I made all the tests that I desired to make. This making of glucose is one of the simplest things in the world. We all know that starch, as starch, cannot be digested. Some of my friends know that I have been considerably interested in vivisections, and I have made a good many experiments in that direction, and it is the universal rule that when starch in solution is injected into the system of any of the inferior animals, it always appears as starch. The iodine test for starch always shows it, consequently it is not digested as starch. In the process of digestion it is converted into grape sugar, which is glucose, nothing more or less; and in the manufacture of glucose the process by which it is made is simply the conversion of the grain into starch, then the process of fermentation is begun, but arrested at a peculiar point, the starch is then put into a converter and is treated with sulphuric acid. It is not necessary to go through the whole process, but after the conversion of the starch, and as one of the essential processes, the sulphuric acid is neutralized by carbonate of lime, which is put in in excess, and any acid which may be left is, of course, converted into sulphate of lime, which is insoluble. So I hold glucose to be one of the most harmless, one of the most nutritive, one of the best foods that we have, and its discovery, the discovery of the process of making it, is a thing which should rank among the great discoveries of the world. It gives us an artificial food which we did not have before. It is in a very nutritive and easily digestible form, more digestible than plain sugar. Chemically there is no difference between grape sugar and cane sugar. The former is just as nutritive and more easily digested than the latter, and I believe that if more of our candy was made from grape sugar instead of cane sugar, it would be better for those who eat it. I think the sugar is better for being mixed with the glucose. It is more easily digested, and from a physiological standpoint, it is improved. I think it is one of the most harmless and useful foods we have, consequently I believe that cane sugar is better for being mixed with it. Of course, the flavor is not the same, and more of it must necessarily be used to produce the same effect that would be produced by pure cane sugar. A larger quantity has to be eaten in order to get the same amount of sweet.

I know there is a prejudice upon the part of many, that too much

candy is injurious; giving too much taffy either to children or grown people is considered injurious, and I am not at all sure but that is the case, still it is not the grape sugar that does the harm, or any sugar, but it is the leaving of it in the mouth and between the teeth that does the mischief. Where there is a want of cleanliness in the teeth, the process of fermentation early sets in. There should be no sulphuric acid in the mouth, even, although some traces be left in the glucose, it will be neutralized by the carbonic acid in the breath, so you have carbonate of lime again. I do not believe that sugar would do any harm if removed from the mouth, but as I say, if either glucose or cane sugar be left between the teeth for any length of time, the process of fermentation sets in, and the result, in most cases, will be the formation of acetic acid, which I consider one of the most injurious substances in its action upon the teeth. You will also get malic and lactic acids, but especially acetic acid. If any of you have experimented by investing teeth in acetic acid, more or less dilute, you will see precisely the same effect that you find in ordinary white decay, as it is called; the same removal of the lime salts from the teeth, leaving nothing but the organic material. The inorganic material has been dissolved out by these inchoate acids that are there. We cannot always tell by the fact that the mouth may present an alkaline reaction, although these acids may have been present and done their destructive work, they may be neutralized by their action upon the lime salts of the teeth, and so the mouth presents a neutral or alkaline reaction when in reality the destructive action of the acids may have taken place.

I hold that in such cases as this, whether it be the sixth year molars, or the others, the great bugbear which we have to fight, the great enemy which stands in our way like a lurking lion, of which we are all afraid, and which overcomes the best of us at times, is this acid which is formed in the mouth, from molecular changes induced by fermentation. The sixth year molars are particularly liable to attacks of this kind for a number of reasons. In the first place, anyone who knows about their development, know that they are developed at a time when the processes of nature are comparatively weak. In the second place, the child's teeth are not cleaned as they should be. This is the dentist's great difficulty in regard to children. It is almost impossible to get them to follow directions in this regard, consequently these acids are formed in the mouth.

Then, from the very fact, as I said, of the differentiation which goes on in the production of sixth year molars at a weak period, a weak state in the development of the child, the teeth themselves are apt to be imperfect, and there are little pits in the center of them. The crystals of enamel which cover their surface, which shoot out like

little crystals of ice on the surface of freezing water, from every point of vantage, do not coalesce perfectly, consequently there are little fissures, little pits which are sufficient to retain enough food to induce the process of fermentation and the formation of an acid which gets in and cuts out the inorganic portions of the teeth, leaving the organic portions to be destroyed by further process of fermentation. So my great apprehension about the decay of teeth is what I have stated. I object most decidedly to the removal of the sixth year molars, as a rule. The process may be continued until, by and by, we will have a race of people with no teeth in the mouth at all, though I do not expect we shall live to see that day. The tendency, however, is in a wrong direction.

Of the first permanent molars. Dr. Owen, at the late Michigan Dental Society, said: I would like to put myself on record as believing in the absolute necessity of saving the six year old molars, if practicable. I think a great deal must be done by education. All of us who have practiced dentistry long, know that a great majority of these cases come to us as the first teeth to be cared for. Very few parents pay any attention to the matter until the child has the toothache. When they take the trouble to make an examination, they find that the tooth is decayed. They suppose that, of course, it is one of the temporary teeth, and let it go. We must instruct parents more in the idea of looking after these teeth in early childhood.

Of the deciduous teeth he said: I am a very great advocate of saving the deciduous teeth alive until nature designed they should be out, and I think it can be done in a great many instances. The question has been asked as to the kind of filling it is best to use. There are a great many things which are well adapted to the purpose. I have had very good success with phosphate of zinc. I do not use hard fillings because, generally, with children, you cannot do justice to them; but if you can bridge over the difficulty for two or three years, or sometimes for a few months, thus protecting the nerve, you save the vitality of the tooth. If a child loses its teeth when from four to five years of age, it cannot have the proper development of the jaw. The jaw contracts, and before it would get the six year old molar, the contraction would be so great as to leave scarcely room for them, or for the bicuspids. Keep the deciduous teeth as long as possible. That is my theory, and though I do not always practice it, I always advocate it. My reason for using phosphate of zinc filling is that it does not irritate so much as some other soft filling.

A LACQUER for steel may be made of 10 parts of clear mastic, 5 of camphor, 15 of sandaric and 5 elemi gums, dissolved in pure alcohol, filtered, and applied cold. The varnish is transparent.

EDUCATION VS. SKILL.

BY DR. J. B. RICH, OF NEW YORK.

The dentist must have skill. I don't want to be understood as disparaging the advantage of a medical education in a general way, but that a thorough knowledge of medicine is necessary in the practice of dentistry, pure and simple, I do not admit. A man who has skill to become a great operator in our profession would easily acquire all the surgical knowledge necessary for him, except in the branch of oral surgery, which is a new department.

Most of the men who have practiced dentistry in this country with the title of M.D., were men who never practiced as physicians or as surgeons. There is Dr. Dwinelle; he went and got the degree, but he was a dentist from his boyhood. His business was dentistry—filling teeth—and in that he made his reputation. The same may be said of Dr. Westcott, of Syracuse; he had a medical diploma, but he made his reputation as a *dentist.* Dr. Harris never practiced as a medical man, but through his writings he gave great honor to our profession. I might speak in this way of many others—the fathers of our profession—Dr. Hudson, of Philadelphia, Dr. Elisha Townsend, and Dr. Harwood, all men who have held honorable rank among us.

I do not undervalue any kind of education—anything that elevates the man; but without that certain combination of faculties that makes the skilful mechanical manipulator, all the diplomas of all the medical and dental colleges in the world will make nothing of him but an ordinary operator.

Dentistry has undoubtedly achieved its greatest success and respectability in this country, where it had its birth; here the first college was originated, and the attempt made to systematize and extend the knowledge which was in the hands of the few. In the organization of the American Society of Dental Surgeons, and the establishment of the *American Journal of Dental Science* many years ago, we made up our minds that we would give freely of our knowledge to everybody. We said that we would not withhold it from the veriest beggar who asked for it; we said that to the poorest man, who carries his instruments upon his back, we will give freely of all the knowledge that we possess, for in elevating him we elevate ourselves. We did that; we carried that out to the letter, and it required men who had already achieved reputation in the large cities to do it. They did it nobly, and knowing all these men as I did, in the early days of my practice, I cannot allow the medical profession any credit at all for the origin of the great profession which we claim as dentists. Neither French, nor German, nor English, had any skill—they were miserable botches. All our great dentists of that day had to dig it out themselves. We

must remember this when we are talking about this subject of dental education. Our profession has advanced, and our art has expanded because we have constantly added to our knowledge everything that we could from every department of science, and not from medicine alone.

CARE OF THE TEETH AND GLUCOSE.

BY DR. WHITING.

I take it, as a general rule, if parents have good teeth the children will inherit them, but they must be used if they are to be kept in a healthy condition. Nature soon ceases to supply where there is no demand. We have in all our best cities schools for the development of our physical systems. We must invent some gymnastics for the teeth, or we shall soon have a race of men who have none. To know how to treat these teeth, we must know the cause of their decay. I wish to call your attention to one of the most active elements in their destruction, and that is glucose or grape sugar; this is used to adulterate all our candies, syrups and low grades of sugar, and is largely sold by our grocers as "corn goods." Grape sugar is manufactured from starch, and the material used in converting starch into glucose is sulphuric acid. In the process this sulphuric acid is not all taken out, a large percentage remains, and sulphuric acid is an active property in the distruction of the teeth. You cannot find a pound of glucose in Detroit as glucose; yet you cannot find a gallon of syrup or anything of that kind in the city that is not adulterated with glucose. You cannot find a grade of our cheap sugars which are not adulterated with glucose.

We must try to impress upon every one that the exercise of the teeth is as important as the exercise of the arm. Why does the right arm of the blacksmith measure sixteen inches and the left arm only twelve? It is on account of the difference in the exercise which they get, and the same principle is involved in the development of the teeth. Where the teeth are not properly exercised, the difficulty does not end with them, but extends much further. By failing to use our teeth sufficiently, we are lessening the use of our stomachs. I do not suppose there are half a dozen men in Detroit but what realize that they have stomachs. If the teeth were properly exercised, and the food properly prepared for digestion, no healthy person would need to know that he had a stomach. We want someone who will invent a system of dental gymnastics. We must have something of this kind if we would save our teeth. If you would become skilful, learn something from every case of practice.

HOMŒOPATHIC TREATMENT IN DENTISTRY.

The article published on page 67 of ITEMS suggests the following:

The author says that homœpathic dentists should "let their light shine." So say *we*. *He* does not hide his under a bushel, but allows it to twinkle unto "the third attenuation."

Now, whatever be the method of treatment, we do like consistency in the matter pertaining thereto. In the article referred to, the Doctor announces the causes of periodontitis to be irritation of foreign substances and excess of filling material, and yet says not one word concerning the removal of the irritant, or reduction of the excess of filling—certainly rational proceedings in view of placing the parts in a condition favorable to a spontaneous cure.

The topical application of equal parts of aconite and alcohol is certainly good treatment under many conditions of congestion and pain; but is this homœopathy? Does this comport with the claim of "Simelia," etc.?

The internal administration of tincture aconite, too, is good, when febrile conditions are present, provided a sufficiently large dose is given to produce a modification of the heart's action.

The Dr. is, moreover, positive that the specified treatment will have an "immediate and decided effect," but in a stated case no more encouraging assurance is offered the patient than that "a few days of rest and treatment" will restore the tooth to its normal condition.

Dr. Webb invites those who use this form of treatment to give their success. If he will accept a statement of failure in lieu, perhaps equally as valuable a lesson may be learned.

A celebrated practitioner and teacher dwelt favorably upon the administration of homœopathic *calcarea sulph.* as a specific for periodontitis, saying that it would "knock the disease higher than a kite." The writer accepted the information kindly given, and, somewhat elated with prospective success, proceeded to follow directions. His first four cases were not satisfactory; the disease in each instance went on with the usual severity, and were finally treated in the orthodox way. In the fifth case the patient, a young lady, returned on the following day, saying that she could not continue the medicine, as it gave her severe pain in the bowels! The package of *calcarea sulph.* is still on hand.

Will Dr. Webb flash his light once more, that we may clearly see our way over this turbulent ocean of dental therapeutics?

RATIONAL MEDICINE.

GOSHEN, N. Y., March, 1883.

DIVIDING DENTISTRY.

BY DR. J. G. PALMER, OF NEW BRUNSWICK, N. J.

Someone has said that dentistry is considered by physicians as a sort of step-child of medicine or surgery. And those desirous of being recognized by the medical fraternity are willing to follow the lead of those who, with Dr. Allport, would divide dentistry into two separate branches, and carrying one of them—the operative—into the medical college, succeed in gaining the coveted honor of being recognized—*not* as dentists, *but as physicians entitled to practice dentistry.*

How can one be an operator of any skill or degree of success, without being more or less mechanical in his tastes? Necessarily much of his work is purely mechanical. His knowledge of medicine enables him to bring diseased conditions of the mouth under control, and assists him to decide what is best to be done in any given case. But there his mechanical skill and ability comes in to give proper direction to his efforts. Are not our most successful operators to-day, whether in the mere filling of cavities of decay, or in the correcting of irregularities, or in the treatment of diseased conditions of the mouth, mainly from the ranks of those who have been in the laboratory, and are yet able to perform the mechanical part of dentistry, if need be?

All this idea of a permanent division of the profession into two branches, seems to me to be but adding to the importance of medicine, while detracting from that of dentistry.

Dentistry, by the efforts of those who have practiced *all* departments, has been brought to such a high standing that medicine is now willing to teach that concerning the diseases of the mouth and teeth which a few years ago was completely ignored, but shall we on that account surrender, and become *children* instead of *step-children* of medicine? Dentistry may or may not be a specialty of medicine—that is a mooted question—but it does not seem to me to be the province of medicine to assume charge over operative dentistry as a separate and distinct branch.

I think one great trouble is in this, that what we know as oral surgery—the special study and treatment of diseased conditions of the mouth and adjacent parts, other than work directly upon the teeth—has grown to such proportions as to bewilder some. And as he who is known as the operative dentist is naturally made more or less familiar with the diseases of the mouth, oral surgery has become a part of operative dentistry.

THE rules of the post office department allow the sender of packages to write the *name and address*, and the name and number of articles on the wrapper of any package of merchandise. If the package fails to reach the party addressed, you will be notified by the department.

A DENTIST MUST BE BORN—NOT MADE.

BY DR. W. H. ATKINSON, NEW YORK.

I hold that the dentist, like the poet, must be *born*. He must have the genius in him to enable him to make way against adverse circumstances. Of this we have many illustrious examples among us who might be named—those who had no teacher. But that does not imply that we should not accept the help of teachers. Are we willing to take the excellence of the past for our present standard? With what are we building? Building with matter, might, and mind to attain professional knowledge that may be taught. When we have that, we can talk a great deal, and to the point. Genius must be trained, to make it efficient. In all times teachers have held that what they taught was final. That has been their trouble; that is our trouble when we attempt to communicate what we know. We ought to have the humility and generosity to acknowledge what others assert they see. Many a man has outgrown his best ideal a number of times, and has gone higher and higher. Here is the great difficulty, that we talk as if we were stating finalities. Let us be prepared to accept the advance as we go.

I make the assertion that no other class of professional men has ever made such progress as that representing dentistry. Is this because dentistry has had better men? By no means; but because they have had better opportunities than others. How is it that they are ahead of medical men, and are making a better show? Simply because dentistry is more demonstrable, and we can show what it is and what it accomplishes.

Those who have most investigated the alleged fact of mummies having had their teeth plugged with gold, have the least confidence in the statement. We are apt to set up one aspect of truth as antagonistic of another; we should gather facts from all sources, and build up a better status for all who follow us.

Let us not look lightly upon what we or others have done. Let us prove all things, and hold fast those which prove to be good; then we will have a more fraternal feeling toward those who come into our hands, by that open frankness which should characterize professional intercourse. We can speak of this now, but let us remember when we were ourselves strangers to this sentiment. I have the reputation of being liberal; but when I was a stranger to this doctrine, small, mean and narrow, it was for fear somebody would filch something from the little which I was conscious of possessing.

No really great mind can ever be insulted or overridden. The moment we find ourselves insulted, there is an undeveloped corner in us that needs illumination.

FUNDEMENTAL PRINCIPLES OF THE POSITIVE SYSTEM OF REGULATING TEETH.

BY J. N. FARRAR, M.D., D.D.S.

Mechanical appliances now used for correcting irregular teeth are constructed upon two principles, known as the Probable and the Positive Systems, so called because one is sure in its action, while the other, owing to the nature of the mechanical principles involved, though probable, is more or less uncertain. These two systems are not only based upon mechanical principles peculiar to each, but have also important individual bearings in regard to physiological law.

The Probable System has for its basis the use of apparatus so constructed and operated by springs and elastic rubber, that a constant and continued force is maintained, the management of which is not only generally beyond the control of the patient, but as it is exceedingly difficult, if possible, to harmonize its action with physiological principles underlying the operation of moving teeth, it is apt to lead to inflammation, pain and exhaustion.

The Positive System consists in the use of apparatus constructed on positive principles of mechanical action in such manner as to act intermittingly, permitting definiteness at will, the application of any degree of force desired, and is not only generally under the control of the patient, but can be operated perfectly in harmony with the principles of physiological law, thus obviating inflammation, pain and exhaustion.

This intermittent principle of action may be proximately attained by the use of the old and well-known wooden wedge, a peg set in a plate, an "inclined plane," or metal occasionally bent; but better still and more scientifically, by means of an instrument which has been in limited use by the profession for such purposes for many years, *the screw*, because more positive and exact motions can thereby be secured.

This classification of systems grew out of an inquiry into physiological and pathological changes in animal tissues during the process of regulating teeth, involving a long series of original experiments leading to the discovery of the importance of conducting such operations in accordance with the principles of physiological laws, and to the knowledge of what seemed to me to be the best method of conducting them.

This process of movement of teeth in the jaw is not necessarily a pathological one. While the movement of a tooth by artificial means, involving pain, inflammation and exhaustion is clearly indicative of the presence of a pathological condition of the tissues, the uncon-

scious natural movement of teeth caused by improper articulation in overcrowded arches, accompanied with *no* pain or inflammation, is equally clear proof that the tissue changes have been carried on under physiological conditions.

Absorption and re-formation of tissue (the changes necessary before and behind a migrating tooth), therefore, may take place under physiological as well as pathological conditions; the physiological process being painless, and the pathological generally being accompanied with pain and exhaustion. Experiments also prove that physiological changes may be induced by mechanical appliances as well as by natural causes, if properly used.

While perverted physiological action, indicated by pain, inflammation and exhaustion, is generally the result of such continued force as is practicable by art, and even by too great a degree intermittently applied, this condition may be avoided by the application of intermittent force of a proper and definite degree, alternated with proper intervals of rest—a principle which, in some respects, is analogous to the law of "labor and rest" in general life.

The basal principles of harmony between mechanical and physiological laws underlying the Positive System of treatment may be summed up in brief as follows:

A continued force, mechanically applied, with no intervals of rest, or even intermittent forces of too great degree, or too frequently applied, will tend to overstep the boundaries of physiological action and tend to a pathological condition accompanied with pain.

THE LAW.

Animal tissues may be made to become painlessly absorbed at will by mechanical pressure of a definite degree (suited to the tissue acted upon), if made in harmony with tissue changes while in a physiological condition, attained by the force of being periodically applied, and maintained when once made, and intermitted by proper intervals of rest, which may be accomplished, for illustration, by the use of the screw; thus enabling the tissue changes to be confined within physiological action.

The dividing line between physiological changes in the tissue of the jaw is found to lie within a movement of the teeth acted upon, allowing a variation, which will cover all cases, not exceeding one two-hundred-and-fortieth to one one-hundred-and-sixtieth of an inch, and made about every twelfth hour; the exact degree of which can be best determined by the patient.

A Pretty Good Idea.—"The proper time to begin to build up good teeth, is within a day or two of nine months before the child is born."

A FOUL BREATH.

BY J. T. CODMAN, D.M.D.

To those to whom a foul breath comes as an affliction, we must tender our regrets. They can study the hints here thrown out; they can know they have our sympathy; but from those who nasty their mouths by their own filth—by uncleanliness, by vile and dirty habits, we must withhold them. We are members of a profession that teaches cleanly habits, and to make our teachings effectual, we must be cleanly ourselves. Lenient as I am, and as I hope all of us may be to such, I cannot conceive how any dentist can approach his patients with a befoulment of fresh garlic, onions or tobacco in his mouth; but disagreeable as this is or may be to most persons, it is yet weak and unobnoxious compared with the nastiness of garments and mouth filled with the stale, second-hand odors of strong cigars or pipes that some of my friends are in the habit of using, and I am sorry to say that they are as innocent of their faults in this respect as babies. Let me draw you a picture.

Some years ago I knew a young dentist who smoked tobacco. He did it genteely. He smoked a very mild-flavored cigar. He drove into the city, and when he arrived at his office, he changed his garments carefully, and thought he disguised the habit from his patients; they did not complain. He did not desire to surrender the habit, and he did not wish to offend his patients. *He thinks he does just the same thing now!* I doubt that any one here could convince him to the contrary, and he will think that I am joking, and do not, cannot mean him, so slowly has the vile habit crept on him. To-day he smokes a stinking thing; rank, outrageous, which is an offence to good taste, decency and manners. He should mount to his attic and there fume away if he must; but no, he will stand and blow his villainous smoke square in your face. He forgets good taste, and walks the street with a cigar in his mouth; and when he enters the presence of ladies he carries with him a disgusting and nasty smelling breath, that is as hard for *them* to bear as some of the breaths of his *highest flavored patients* are for *him*. What excuse is there for such a man who outrages decency in such a manner, and talks to his patients loudly about brushing their teeth and keeping their mouths clean? There is just one man worse than this one. It is he who adds this befoulment to an already stinking breath.

"I have met with very good success in preserving exposed pulps of teeth. I cover with a small piece of tissue paper, upon which is a little of the powder of the oxyphosphate, mixed with carbolic acid, then fill with the phosphate of zinc, to be plated with metal."—*Dr. A. J. Prosser.*

CIVILIZATION AND THE TEETH.

Civilization does not promote decay of the teeth any more than many other conditions in which men live, but there are circumstances in which we are placed and habits in which we indulge, that are injurious to the teeth. I believe we observe more of the laws of health than any savages ever did, though we often grossly violate many of them. In respect to ventilation for one thing; our food is often not what is calculated to nourish and promote health, and many habits and circumstances in the case of very many persons are not promotive of health. Health is promoted by regularity in food, exercise, rest, labor, and by correctness of all our daily habits. We can tell by looking carefully over the daily routine of our lives wherein we offend against the laws of health. We ought all to better observe the laws of hygiene.

In many respects we have great advantages over many of the savages. We are not subjected to so great changes of temperature; are better protected by clothing and houses, and are not so often served with improper or scanty, or unwholesome food. We are usually well supplied with good materials and ought to prepare our food in the proper form to be readily assimilated.

Savages have some advantages over us. They usually have fresh air and plenty of exercise and sometimes acquire a better developement; but that is not always the case. I apprehend that when the balance is struck it is largely on our side; and we are constantly improving. The laws of health become better and better understood, and many diseases are greatly modified and easily controlled. I believe that there is a gradual and certain improvement in teeth. More attention is given to them and we know better than formerly what care they require.

The reason why the Swedes, Irish, Scotch, and some other foreigners have so much more trouble with their teeth after coming to this country than while they remain at home, is caused chiefly by changes in their food, mode of life, and climate. I have known some of them wish and long for the food of their native countries. The food there being rougher and coarser, tends to give the teeth exercise and keep them strong. Here they use soft food and much fruit, and they are often negligent of cleanliness, which leads directly to the conditions and diseases which produce decay and destruction of the teeth, gums and processes. I think their remedy would be to maintain as nearly as possible their previous habits of life and forms of food.

J. TAFT.

Lining cavities with copal, dissolved in ether, before filling, is practiced by some dentists. It is claimed this effectually closes the pores of the dentine, and makes the filling more impervious between its surface and the wall of the tooth.

STEEL AND ITS TEMPERING.

BY DR. B. W. FRANKLIN.

We call the attention of the profession to the importance of understanding the method of working *Steel*—so far, at least, as to be able to re-point and temper their own excavators and other delicate-pointed instruments. This subject has for a long time appeared to us as being of great importance to the operative dentist. There are many difficult cases requiring alterations to be made in the points of instruments, so as to adapt them to the exigencies of the case in hand, and to be able to make alterations at the time when the difficulties presented suggest the forms required. It was my practice for many years to make these alterations almost daily. There are many standard forms that can be purchased at the dental depots, or of the instrument makers, cheaper and better than the dentist could make; but the knowledge required to enable him to make those delicate points, which none but a dentist can appreciate, is certainly of great importance to every practitioner who prides himself upon the delicacy and perfection of his operations.

The best cast-steel, for any light purpose, is the small square bars, for the reason that the square steel is wrought out under the hammer, while the round is rolled or drawn out in a wire-mill; in one case, the crystalline structure is condensed and rendered more compact and finer; in the other, the crystals are elongated and less tenacious; the obtusity of these elongated crystals, when reduced to their delicate points, have little power of endurance.

The best method of tempering small, delicate points, is to take a sheet-iron box, or trough, and cover the bottom about one-sixteenth of an inch deep with finely-powdered animal charcoal, then place on the coal-dust a layer of instruments, cover these in the same manner, and so on till all in the box are well covered; this trough is now to be placed in a good, clean charcoal fire, and heated up slowly until the box and contents are even and uniformly heated to a dark-red heat; keep the heat at this point for an hour or more, and then suddenly turn the contents into a pail or tub of clear cold water. The animal charcoal recarbonizes the steel and improves its quality, as well as protects it from the danger of over-heating, which, if done, would destroy it, rendering it brittle and worthless.

The instruments are now to be taken from the water, wiped dry, placed in the iron dish, and covered with oil; the dish and contents to be placed over the fire, and heated up slowly until the oil takes fire on the surface, then remove the dish from the fire and allow the oil to become nearly cold before removing the instruments. If the operations are conducted with reasonable care, the instruments will all be of one uniform temper, corresponding to the needle temper of the best English

manufacture. In case we want to temper one or more instruments for immediate use, after heating to redness to remove the temper, file the point down, leaving it straight and round, the size required, smoothing with emery-cloth, or pine stick with fine emery; the instrument is now to be shaped by using a small hammer and bending the steel cold over the edge or corner of a steel stake, or any convenient hardened piece of steel that has a square corner. All the bending and shaping may be done cold, with light blows with a hammer; we now, with a fine file, give the exact shape required, and temper in the flame of a common soldering lamp, being careful not to over-heat the steel—it should only be heated to a cherry-red—and plunged into clean, cold water; the temper is now drawn to the required hardness, which must vary according to the purposes for which it is designed to be used. The blades of excavators may be oiled with sweet oil, and held over the flame of a very small alcohol lamp, applying the heat to the instrument a little back of the point, and moving it backward and forward in the flame, so as to heat it up slowly and uniform as possible, and at the instant the oil takes fire at the point of the instrument, it should be plunged into cold water; if this is done properly—and a very little practice will enable the operator to judge correctly as to time and degree of heat—the results are the same as if the temper was drawn in the manner first described; a good spring temper requires the oil to be burnt twice, and sometimes three times. When the temper is drawn by color, it may be done in the flame of a lamp; and when the instrument assumes a bright straw-color, it may be plunged into water. A dark straw-color is less hard, and a blue color will spring without breaking. Those having little experience in drawing temper by color, would not succeed as uniformly well by color as by the other processes, inasmuch as the slightest modification in the color of course ruins the temper of the instrument; while in drawing the temper under oil, it must be obvious that when the oil ignites, the instrument is subjected to one uniform degree of heat, and will be found to be uniform in temper and quality.

The amount of dentistry annually done in the United States alone is enormous. There is undoubtedly more than a half million of dollars worth of gold packed into the teeth, and a fourth of this value in plastic fillings. There is nearly four million artificial teeth used, that, with the plates on which they are mounted, does not cost the profession less than three hundred and fifty thousand dollars. Then there are many other expenses; so that the actual cash spent by dentists for materials is more than one million dollars, costing the people at least fifteen million dollars a year. And this is only upon an estimate of one thousand two hundred and fifty dollars a year for each of the twelve thousand dentists. Yet, three times this amount of work would have to be done to include all that is sadly needed.

"ABOUT IMPRESSIONS" AND OTHER THINGS.

BY DR. L. P. HASKELL.

There is so much written and taught in dental journals and colleges, or some of them, of methods in metal work that ought long since to have become obsolete, that I feel impelled to write a few thoughts that may be helpful, for the benefit of the younger members of the profession, and those who are about to commence practice, and who so often become discouraged at the drawbacks they meet with in consequence of the annoying and uncertain methods in which they have been instructed, that they prefer to stick to "rubber" work.

Fine-spun theories about the shrinkage and expansion of plaster are well enough to talk about, but when offset with successful results in a 37 years' practice, confined to the mechanical department, in which such theories have been entirely ignored, they are of little account.

To say that plaster will not make a sharper impression than wax or modeling compound, is arrant nonsense; and to compel a student in college to spend weeks of valuable time in learning to take wax impressions (and I have known some such, who, after graduating, could not take a plaster impression successfully), is an imposition that ought not to be tolerated.

After the impression, the next move is preparing the model or cast for moulding. Here again come in nonsensical theories about the use of shellac and oil in filling the impression, etc. Thin shellac strikes in to the plaster, and does not make an increase of thickness on the surface that is of any account whatever, while it is of value in separating the impression and cast, so as to see plainly what is one or the other. The thin coat of oil is equally unobjectionable.

In dispensing with defined air-chambers, which are superfluous, the plate should be raised over the hard palate, slightly. There are two methods of doing this: one is to scrape the impression, and the other to raise with a thin film of wax the plaster cast. I have heard of a professor in a dental college instructing his pupils to take a piece of lead and lay it upon the die, and swage the plate over it! The method ought to be patented. Scrape the rear of the cast slightly between coronoid process and near to the center, from where the edge of the plate would come, *forward* ¼ of an inch.

Make the cast flaring all around, so that it may *drop* from the mold readily, bearing in mind that the cast will deliver itself from the mold if thus flared, with less tearing away than can possibly be done by lifting it out.

If the case is badly *undercut*, make a "core," thereby avoiding in a simple way, the necessity of using the so-called Hawes' Flask. After the cast is shellaced, all the portion that is undercut, and spread on a

thin coat of plaster and asbestos, say ¼ inch at the base, and so to a thin edge at top of cast. This must be thoroughly dried, no matter how rapidly; then putting in place on the cast, mold, and as it drops out with the cast, replace it in the mold, and pour the metal.

For dental dies there is but one metal that fulfills all the requirements—which are, *non-shrinking, hardness, toughness, smoothness*—and melting at a low temperature, and that is Babbitt metal. But, remember that all sold by that name is not fit for the dentist's use, because it is made for another purpose, and is not needed so hard. To insure the proper article, make it as follows: 1 part copper, 2 parts antimony, 8 parts tin. Melt in a crucible, in a forge, *in the order* named. As soon as the tin is put in turn off into ingots and re-melt. For the counter-die use lead, with 1/6 to 1/8 tin added to reduce the melting temperature, and also harden somewhat the lead. Coat the die with whiting, and don't turn the lead too hot. If your Babbitt metal is thick and does not flow readily, add more tin. Thirty years' use of this metal, after using zinc, tin, etc., has demonstrated it to be at once *simple, expeditious and reliable, every time.*

Sand, moistened with olive oil, is of great advantage in that it is always ready for use, not needing to be renewed for weeks or months. The odor from it is not to be compared with that of vulcanizing of rubber.

In view of such results, it is a pity that students should be compelled to devote so much precious time to the making of zinc dies, a method that is perplexing, slow and uncertain in results, and which should, long ago, have become obsolete. We are told by its advocates, that the shrinkage of zinc is necessary! If the plaster cast represents the mouth, and I hold that it does, why not fit the plate to that? This the Babbitt metal die will always do, and I find, as a matter of course, the plate fits the mouth, and secures to me the most satisfactory results in what is considered the most difficult class of work, viz.: the heavy, continuous gum work.

In swaging plates, use what is known as *lower* bending pliers, for both upper and lower plates, and also the wood and horn mallets. Neither of these tools do any harm to the metal, and greatly aid in the process.

Oil both dies, and if careful to wipe off any base metal that may adhere, and which can readily be seen, there will be no need of putting the plate in acid before annealing, as some teach, but do so *after* annealing, so as to see what may be on the surface after swaging.

Don't hesitate to cut your full upper plate in front, and lap it, for while it saves time and annoyance, it also increases the strength of the plate at the point where there is the most strain, and if the teeth are to be soldered on, there is far less danger of the plate warping than if it

has been cramped into an unnatural condition by swaging without cutting.

Learn to use the mouth blow-pipe, even if you should afterward make use of a self-acting one. A blow-pipe should have a large mouth-piece, so as to rest it against the lips and not between them. In order to blow a steady blast, do not let your "wind-bag" collapse, in other words, keep the diaphragm distended all the time, then you can keep up a steady blast with the cheeks, taking in your supply through the nose.

The practice of soldering and finishing the backings before soldering to the plate, is all very well for those who have the time thus to putter. But time is saved and just as good work the result, by a simpler method. Invest plate and teeth in plaster and sand (which is preferable to asbestos, because it is not so yielding in backing up,) and in a sheet-iron ring; use thick gold, say about gauge 24; round the top of each backing and chamfer the edge; split the pins and cut off the surplus with a sharp tool; have the plate clean, and the easiest way to do it is to wash off the wax by dashing on boiling water; use plenty of borax; I prefer the pulverized, wetting it up on slate or glass, putting it on with a stick or brush; cut the solder *small* and put it where you wish it to remain. I use 20 carat gold and 20 carat solder; if your solder is what it ought to be it will flow like water, and leave a smooth surface, needing only to *bur* off the heads of pins. Polish with pumice on a pine stick in the lathe, and brush, and oil. Soft brushes, small sizes, will do the most effectual work, as they *hold* the pumice, while the stiff ones throw it off.—*Ohio State Journal.*

PORTLAND, March 29, 1883.

FRIEND WELCH: I see, in January ITEMS, a method of filling artificial teeth to imitate the natural ones, described by Dr. Harper, of St. Louis; an original and pretty operation. I have still a different, and perhaps quicker, method for which I claim originality. I take a thin corundum wheel with the dental engine and cut a groove as deep as may be desired, anywhere between the grinding surface or cutting edge and the cervical wall or border across the proximal surface, then countersink the lingual and labial ends of the groove with a corundum point, and fill with crystal gold and polish. I can perform the operation in fifteen to twenty minutes. I have long been a reader of your really excellent journal, and now that I am a subscriber, I want to contribute occasionally.

N. CHURCHMAN.

Portland, Oregon.

Should Dentists be Exempt from Jury Duty? The dentists of Washington are having a test case involving this question carried to the court in general term.

DENTAL SKILL.

BY N. W. KINGSLEY, NEW YORK.

Medical education must be made subordinate to dental skill. I wish to express my unqualified disapproval of the effort which has been made in a certain part of this country to divide the practice of dentistry as it now exists, confining the collegiate instruction in dentistry to oral surgery and operations on the natural teeth—ignoring all dental prosthetics and relegating all its requirements to the workshop of the mere mechanic, where, without education or a mind above *mechanics*, the opprobrium of dentistry would be perpetuated.

I do not deprecate, nor would I depreciate, a medical education. I would not depreciate a knowledge of any or all the sciences; but I am impressed more and more every year with the fact that ninety-nine per cent. of the requirements made by suffering humanity upon a dentist are fully met by mechanical skill rather than by medical knowledge. This question becomes a very serious matter for a young man whose pecuniary circumstances force him into the most limited time for preparation. As the great bulk of the operations in dentistry require the development of a high degree of manipulative ability; he is far more likely to become a skilful practitioner if his limited time of study is devoted to mastering the specialty, than if he attempts to first graduate in medicine and then learn dentistry.

I wish to be placed distinctly upon the record in the statement that I do not consider dentistry as being a specialty of medicine—only in a very limited degree. It is rather a mechanical art of the highest order, and for its mastery requires far more mechanical training than it does of strictly medical knowledge.

A large majority of the ablest dentists in the past have come from the various mechanical trades—the jewelers, the machinists, the gunsmiths, the wagonmakers, shoemakers, tailors and what not, have each contributed very skilful men, and I would recommend to any young man contemplating the practice of dentistry that the best preparation he can make for it while passing his teens, would be the acquirement of any art which would make him master of his fingers and of delicate tools.

Experience with a New Set of Teeth.—"I have had all my teeth pulled out, for, to tell the truth, I think they have been a curse to me always, rather than a blessing. Now, in their place I have had false ones put in, and I must tell you my experience with my new masticators.

I felt, when the 'set' was first put in, as though I had a couple of wheel-barrows full of paving stones lying around loose in my mouth, and it seemed as if they were going to be spilled out at every motion. The first day I waited till everyone had done their dinner, not daring

to make an exhibition of my teeth, and run the risk of their dropping on the table.

"Well, I chewed a little and stopped, and finally went to my room and laid the darned things on the back part of an upper shelf, thinking they were no go. The next day I tried them again, but with better success, and after this I would carry them in my pocket, occasionally trying them on, and every time experiencing some new emotion. One day they would feel as much like a great horse shoe, with nails in, as anything else. Some of my experience was very comical. They failed me so many times, that I was getting tired of my bargain; but, by perseverance, I have become used to their ways, and now they cannot get away from me, as I know just how to manage them, and how to bite on them, and bless, from the bottom of my heart, the inventor of false teeth."—*Ex.*

The First Permanent Molar.—Dr. Dorrance says: The loss of these teeth at the age when they are usually lost—a short time after eruption—results in serious injury. It results not only in less grinding surface and support to the other teeth, but also in a contraction of the jaw. The jaw is shortened and robbed of its symmetry, and many of us might be much handsomer men than we are now, if we had not lost those teeth a good many years ago. The teeth are not only allowed to crowd themselves around toward the side on which the tooth is lost, but the shortening of the jaw results in a deformity, and, in some cases, in a considerable deformity. Many parents wish this tooth to be extracted because it is a source of so much pain and loss of sleep, not only to the little patient, but to the parents. You must be able to satisfy them that it is proper and best that these teeth should be retained, and you must be able to treat the tooth to the best advantage, so as to save not only the inorganic portions, but also the pulp. We cannot afford to lose the pulp. This question is a very serious one, because oftentimes the tooth is so frail, not being fully developed, and the conditions are so unfavorable, that the operation is a difficult one. Then, too, the patient will not let you do anything without particular urging and coaxing.

To Prevent Boils.—A very simple remedy is made known by Dr. Sieven, in a St. Petersburg journal, for preventing the development of boils. He states that if the skin be superficially scraped with a small knife, so that a drop or two of blood may be pressed through the epidermis, as soon as the peculiar stabbing or pricking sensation and slight induration announces the commencement of the boil, it will not be further developed.

ARTICULATION OF ARTIFICIAL TEETH.

BY DR. W. E. DRISCOLL.

Stated in the fewest words, my improvement consists in securing backward pressure upon an upper set of teeth and forward pressure upon a lower set. No one will, I suppose, question the propriety of this as applied to an upper set. At first view, its application to a lower set seems more open to objection. Press the lower set forward and we utilize the only approach to a rim that can be left to many lower sets, that between the jaws under the molar teeth. Forward pressure makes this rim fit firmly to this part of the gum. A failure to do so is a matter of common complaint with those learning to wear artificial teeth. Such close fitting will produce soreness at first, but in time the parts will toughen the same as any other part of the gums.

How are we to secure the backward pressure upon upper sets and forward pressure on lower sets at the same time? It must be done by elevating the line of articulation at the front teeth as much as can be done with upper teeth having a very short bite, and depressing the posterior teeth as much as can be done with lower teeth extremely short, from the pins to the grinding surfaces of the molars. Teeth must be selected with this object in view, or the plan cannot be carried to a successful issue.

Very often four bicuspids must be left off to shorten the sets so they will allow the necessary depression upon the posterior portion of the gums. When setting up the teeth, leave a space between the front teeth that will allow an ordinary thickness of blotting paper to pass between their cutting edges when the molars are firmly set on their grinding surfaces. After a few days' or weeks' wear, the front teeth will be found striking together freely as hard as is desirable, if not so much so as to require some grinding to again throw the main pressure upon the back teeth. The outside and inside cusps of the molars, above and below, must be on an exact level—outside ones no higher than the lingual or palatal ones. When an extreme degree of absorption has taken place, the superior molars will extend near an inch from the upper gums. But let no one hesitate to try them in that way, and the result will be a surprise. Where the inferior alveola is practically absent, care must be taken to set the six front teeth fully as far backward as where the ridge should be, and in extremely discouraging cases it will at times be best to set these six teeth a little inside of where the ridge has been. This will, in some cases, leave the upper front teeth standing much more prominent, or outside of the line of the lower ones. If this cannot be remedied by setting the upper teeth under the gum without interfering with the upward slant of the line of articulation, then the hiatus must be endured, and in many mouths it will be found to amount to no real objection upon trial.

In cases where the short appearance of the upper front teeth would be an objection, an off-set may be made between the molars and bicuspids of each set that will secure or produce the desired backward pressure upon the upper set without the upward slant extending so far forward. This off-set may also be used where there is not room between the ridges to get the amount of dip necessary to a practical result; or to get the upper front teeth to show as desired.

The upper slant of the line of articulation might terminate at the first bicuspids; but this will not be found necessary, as a rule, and in some cases would defeat the attempt to induce the patient to wear teeth at all.

Where a portion of the lower natural teeth are retained, all points of articulation that have a tendency to press the upper plate forward, must be avoided, and all available points to construct slanting surfaces that will result in backward pressure upon the plate must be used. Sometimes this can be done by setting a tooth on each side, so as to receive a glancing stroke from the lower teeth, or prominences of the material of which the plate is made may be so placed as to shut down behind a posterior lower tooth on each side. Sometimes several of the molars are very much elevated above a plane with the teeth anterior to them, and have a very decided tendency to press an upper set out of the mouth. Such teeth, when leaning forward, must not be allowed to strike the upper teeth with their grinding surfaces; but to utilize them in keeping the plate in position, prominences of plate material must extend downward behind them, presenting an inclined plane for them to strike against, that will press the plate backward. The patient may object to these prominences, slanting strokes, etc., at first, but when he realizes their value there will be an end to objections.

Some critics may say this plan will require teeth to be made without regard to their natural appearance, or to the restoration of sunken features, etc. Not so, if rightly understood and practiced. Although the points of contact of the opposite sets of teeth may be too far inward to restore the expression, this may be counterbalanced by additional material in the rims. And with a full rim, and teeth set well inward, the lips may and do take hold upon these rims and aid to retain them in their places. Very often teeth, instead of being assisted in this way to retain their place upon the gums, are forced from their position by the action of the lips and cheeks.

An accurate bite is necessary when these slanting surfaces and prominences are used in articulating teeth. To secure this I have an improvement. When the wax is placed between the gums, direct the patient to swallow at the same moment that the jaws close toward each other. This plan is so satisfactory as to leave nothing to be desired further in that particular. If a hard substance is embedded in the wax

to arrest the closure of the jaws at the right distance from each other, the gum will generally be flattened at that point. So when the models are placed in the bite, the flattened points in the bite must cut out that the models may go accurately to their proper positions.—*Transactions Indiana Dental Society.*

Of Dental Colleges, Dr. Taft says: I think if no dental colleges had been established, the dental profession would have remained in a low estate. It would not have been developed as it has been developed to-day. Had it not been for these schools the medical colleges would have been closed to us to-day as they were then. The organization of dental colleges has been a very important influence in the creation of our literature. Associations have been established as the result of these schools, and a unity of feeling has resulted from them. So all the work that has been done for the elevation of dentistry has been influenced, to a very great extent, by the special colleges which have been organized, and by the work which they have done. Notwithstanding the fact that the day of their great usefulness may have passed away, we should remember them for the good they have done before. To-day the doors of the medical colleges are thrown open, and the dentist is invited to come in. They now recognize us as an important branch or specialty of medicine. I think we would not have been anywhere near where we are to-day if these special schools had never existed.

PROF. D. D. SMITH, of Philadelphia, says: I know of no statistics by which we may judge of the healthfulness or otherwise of dentistry. I regard the calling as one tending to shorten life. Of the learned professions, the clergyman is the longest-lived, the physician next, and the lawyer next. True advancement in civilization and mental culture tends to longevity. That people attains the greatest average years which attains the greatest mental culture, while living upon true temperance principles. The improvement in dentistry is not due so much to appliances as to the advance in intellectual attainments. Societies and colleges have lifted the calling to a position of great respectability since 1839. There has been a general elevation of tone throughout the profession of the country; and to it is due increased longevity.

If you want your children healthy, teach them to chew their food fine and eat slowly. Do you think they can learn it themselves? So can they learn to read and write, to comb their heads and brush their teeth; but how much better can they do these things with instruction?—*Dr. J. T. Codman.*

Scientific.

HUMAN PHYSIOLOGY.

BY L. ASHLEY FAUGHT, D.D.S.

Formerly Lecturer on Physiology in the Philadelphia Dental College.

(CONTINUED FROM PAGE 135.)

The gland beside the ear (parotid) is the largest of the three salivary glands, and is emptied into the mouth by a duct (steno) which opens opposite the second molar tooth in the upper jaw. Prof. J. C. Dalton has obtained pure parotid saliva from the human subject, by simply introducing a silver tube, of the one twenty-fifth of an inch in diameter, into the opening of the duct, and observed the following facts:—That this saliva is distinctly alkaline in reaction, rather clear and watery in appearance, and the most abundantly secreted. Mastication exerts a peculiar influence on the act of its secretion; increasing the quantity during the process, and particularly on the side of the mouth in which the bolus is being chewed. We do not, however, believe that such increase in the flow is dependent upon the mechanical pressure of the muscles and of the condyle of the lower jaw, but attribute it to nervous influence. From the position in which the parotid saliva is poured upon the food between the teeth, it is a tenable conclusion that it has an important mechanical office.

The gland below the lower jaw (sub-maxillary) is the second of the salivary glands in point of size. Anatomically speaking, it lies in the anterior part of the sub-maxillary triangle of the neck, and is emptied by a duct (Wharton), about two inches in length, which opens beneath the tongue, at the side of the small membranous fold attached to it (frænum). The sub-maxillary saliva is more viscid than the parotid, perfectly clear, gelatinizes on cooling, and is poured forth in greater abundance when sapid substances are introduced into the mouth. The parotid and sub-maxillary glands exist in pairs—one gland on each side.

The pair of glands below the tongue (sub-linguals) are the smallest of the salivary glands, and are situated on either side of the frænum, being emptied by from eight to twenty ducts. Their secretion is more viscid than the sub-maxillary saliva, but does not gelatinize on cooling. It is glutinous, distinctly alkaline, and in its function, according to Bernard, is specially connected with the act of swallowing (deglutition).

Beneath the mucous membrane on the inner surface of the lips are the labial glands, and in the sub-mucous tissue of the cheeks are the

buccal glands. The latter are generally smaller than the former. Some of the buccal glands are quite large, and from their position are known as the molar glands. There are also glands on the posterior half of the hard palate; on the soft palate; simple and compound follicular, together with lingual glands on the tongue; pharyngeal and tonsilar glands in their respective positions; while the entire mucous membrane is abundantly provided with mucous follicles. The secretions from this host can never be obtained separately for study, but are supposed to be a grayish, viscid mucus, containing a number of white corpuscles (lucocytes) and desquamated epithelium scales. These secretions give the turbid, opaline character to the mixed saliva; for the secretions of the salivary glands are all perfectly transparent. About three pounds are secreted in twenty-four hours, and more than one-half of this is done during the intervals of eating. This immense quantity of fluid is at no one time removed from the blood, and is reabsorbed almost as fast as secreted, and none of it discharged from the organism.

Mixed saliva taken from the mouth is colorless, somewhat opaline, frothy, slightly viscid, with a faint and disagreeable odor. The specific gravity varies from 1004 to 1008. The reaction is almost constantly alkaline. The composition of human saliva, according to Bidder and Schmidt, is,

Water,	995.16
Epithelium,	1.62
Soluble organic matter,	1.34
Sulpho-cyanide of potassium,	.06
Phosphates of soda, lime and magnesia,	.98
Chloride of Potassium, Chloride of Soda,	.84
	1000.00

Ptyaline is the active principle of saliva, and its companion organic material is mucosine, with a trace of albumen.

The mechanical function of saliva has already been referred to,—its chemical function consists in its changing cooked starch into dextrine, and finally into glucose. This action is principally due to its ptyaline. Raw starch is acted upon in the same way, but very slowly, and is generally passed to the stomach for the satisfactory production of the change. The saliva acts also as an intermedium of taste, dissolving substances, and thus bringing them more thoroughly and closely into relationship with the nerves of taste. It has also been observed that the saliva has a tendency to entangle bubbles of air in the alimentary mass, and this undoubtedly facilitates the penetration of the gastric juice. The salivary glands are vicarious in their action with the kid-

neys. This fact is sometimes made unpleasantly evident in the odor of urine upon the breath, of persons we come in contact with who are not particular to empty the bladder at proper intervals.

When the food has become thoroughly masticated, and coated by the mucus and saliva, it is in a fit condition to be swallowed.

Deglutition is the fourth stage of digestion, and is the act by which solid and liquid articles are forced from the mouth into the stomach. The process involves three stages:—The passage of the bolus through the isthmus of the fauces into the pharynx; then, by a contraction of the constrictors of the pharynx from it into the œsophagus; and finally, by the action of the muscular walls of the œsophagus, from it into the stomach. The parts concerned in deglutition are, therefore the tongue, the muscular walls of the pharynx, and the œsophagus.

The tongue is the chief agent in the first stage of deglutition. Its anatomy has already been given.

The pharynx, in which the most complex movements of deglutition take place, is a muscular pouch or bag, irregular and funnel-shaped; its longest diameter is transverse and opposite the horn (cornua) of the hyoid bone. Its length is about four and a half inches. It is suspended superiorly and posteriorly from the basilar process of the occipital bone, and the upper cervical vertebra, with no true anterior boundary. A movable, musculo-membrane, continuous with the roof of the mouth, (velum pendulum palati) imperfectly separates it from the mouth. This soft palate has a conical process (uvula) hanging from the centre. The anterior pillars of the fauces are formed by the muscle running from the palate to the tongue (palato-glossus) on either side; and the posterior pillars by those running from the palate to the pharynx (palato-pharyngeus). Between the anterior and posterior pillars are the tonsils. The isthmus of the fauces is bounded above by the soft palate and uvula; lateraly, by the pillars of the palate and by the tonsils; and below by the base of the tongue. The upper openings into the pharynx are, the posterior nares and the orifices of the tubes from the ear (eustachian.) Below, are the openings of the œsophagus and of the larnyx.

The framework of the pharynx is formed by the constrictor muscles, three in number—superior, middle, and inferior; together with a muscle (stylo-pharyngeus), coming from the pen-like process (styloid) of the temporal bone. These constrictors are arranged in a lamelliform manner to one another, the inferior being the most exposed from behind, and overlapping the middle, which in turn covers in part, the superior. The superior constrictors form the muscular wall of the upper part of the pharynx, and arise from the hook-like process (hamular) of the wedge-shaped bones (sphenoid); the ligaments

passing from the wings of the sphenoids to the lower jaw (ptenygo-maxillary); and by small slips from both the upper and the lower jaw. Hyrtl gives in addition, slips from the sides of the tongue. Their fibres then pass through backward and meet at the median line (raphe) upon the posterior surface of the pharynx; a few fibers being attached to the flat tendon (aponeurosis) joined to the ridge (pharyngeal spine) on the basilar process of the occipital bone.

The stylo-pharyngeus muscle arises from the inner surface of the base of the styloid process, and passes between the superior and middle constrictors, spreading out its fibres to mingle with the constrictors and the palato-pharyngeus, while a few are inserted into the upper border of the thyroid cartilage.

The middle constrictors are flattened muscles arising from the horns (cornuæ) of the hyoid bone, and from the stylo-hyoid ligaments, which pass backward to meet in the median raphe.

The inferior constrictors are the most powerful of the muscles of the pharynx, and arise from the sides of the thyroid and cricoid cartilages of the larynx. The inferior fibres curve backward, and the superior backward and upward, and meet in the median raphe.

The muscles which form the fleshy portions of the soft palate, are likewise important in deglutition. They are the elevators of the palate (levator palati), the muscles that were supposed to make the palate tense (tensor palati), the muscles passing from the palate to the tongue (palato-glossus), the muscles passing from the palate to the pharynx (palato-pharyngeus), and the azygos uvulæ.

The levator palati arises from the rocky (petrous) portion of the temporal bone, and the adjacent cartilaginous portion of the eustachian tube, and being inserted into the posterior portion of the soft palate raises the velum.

The tensor palati has a fleshy and a tendinous portion. The fleshy fibres arise from a fossa (scaphoid) of the sphenoid bone, pass downward, become tendinous and wind around the hamular process, from whence the muscle passes to be inserted into the median line of the soft palate. This muscle probably dilates the orifice of the eustachian tube.

The palato-glossus, which forms the anterior pillar of the soft palate, arises from the side of the palate near the uvula, and passes to be inserted into the side and back (dorsum) of the tongue. This muscle constricts the isthmus of the fauces by depressing the soft palate, and elevating the base of the tongue.

The palato-pharyngeus muscles form the posterior pillars of the soft palate, and arise from it, joining with the fibres of the stylo-pharyngeus, to be inserted into the posterior border of the thyroid cartilage.

They approximate the posterior pillars of the palate and depress the velum.

The azygos uvulae are small muscles which form the fleshy portion of the uvula.

The contraction of the muscular walls of the pharynx forces the alimentary bolus into the œsophagus, a thick muscular tube about nine inches in length, extending to the stomach. The coats of the œsophagus are three in number:—An external coat composed of external longitudinal muscular fibres and internal circular ones; a middle coat composed of fibrous tissue which attaches the mucous membrane to the muscular tissue, and therefore sometimes called the cellular coat; and an internal or mucous coat.

[TO BE CONTINUED.]

NITROGEN.

BY PROF. J. D. STEELE.

This gas is called nitrogen because it exists in niter.

N forms four-fifths of the atmosphere, and is found abundantly in ammonia, nitric acid, flesh, and in such vegetables as the mushroom, cabbage, horse-radish, etc. It is an essential constituent of the valuable medicines, quinine and morphine, and of the potent poisons, prussic acid and strychnine. Its compounds give to burnt hair and woolen their peculiar odor.

As the air consists of N and O, (oxygen) the easiest method of obtaining the former gas is to remove the latter. Place in the center of a deep dish of H_2O (water) a little stand several inches in height, on which a bit of phosphorus may be laid and ignited. As the fumes of phosphoric anhydride ascend, invert a receiver over the stand. The phosphorus will consume the O of the air contained in the jar, leaving the N. Add more H_2O as that in the plate rises. The jar will at first be filled with white fumes of phosphoric anhydride (P_2O_5), but they will be absorbed and give place to the H_2O till one-fifth of the receiver is filled with H_2O.

All descriptions of N are of a negative character. It neither burns nor permits anything else to burn. It neither supports life nor destroys it. Yet a candle will not burn in it, and a person cannot breathe it alone and live, simply because it shuts off the life-giving O. So will a person drown in H_2O, not that the water poisons him, but because it fills his mouth, and shuts out the air. N has only a weak affinity for any of the elements. The instability of its compounds is a striking peculiarity. It will unite with iodine, for example, but a brush with a feather, or a heavy step on the floor will set it free. Like a half-reclaimed gypsy from the wilds, it is ever seeking to be free again; and not content with its own freedom, is ever tempting others, not of gypsy blood, to

escape from thraldom. Like a bird of strong beak and broad wing, whose proper place is the sky, it opens the door of its aviary, and rouses and flutters the other and more peaceful birds, till they fly with it, although they soon part company.

Four-fifths of each breath that enters our lungs is N; yet it comes out as it went in, while that portion of the O which remains behind performs its wonderful work within our bodies. There is a constant exhalation of N through the pores of the skin. This small amount is perhaps absorbed in the lungs, but it is of no use to the body, so far as known. One-fifth of our flesh is N, yet none of it comes from the air we breathe. We obtain all our supply from the lean meat and vegetables we eat. Plants breathe the air through the leaves—their lungs; yet they do not appropriate any of the N obtained in this way, but rely upon the ammonia and the nitric acid their roots absorb from the soil. N enters the stove with the O—the latter unites with the fuel; but the former, having no chemical attraction, passes out of the chimney. Even from a blast furnace, where Fe (iron) melts instantly like wax, N comes forth without the smell of fire upon it. So inert is it, that it will not unite directly with any organic substance. We must all, animals and plants, depend upon finding it already combined in some chemical compound, and so appropriate it to our use. But even then we hold it very loosely indeed. The tendency of flesh to decompose is largely owing to the instability of the N in its composition.

The difference between these N and O can be best illustrated by having a jar of each, and rapidly passing a lighted candle from one to the other; the N will extinguish the flame, and the O relight the coal. By dextrous management, this may be repeated a score of times.

The one is the conservative element, the other the radical. But notice the nice planning shown in the adaptation of the two to our wants. O, alone, is too active, and must be restrained; N, alone, is sluggish, and only fit to weaken a stronger element. Were the air undiluted O, our life would be excited to a pitch of which we can scarcely dream, and would sweep through its feverish, burning course in a few days; were it undiluted N we could not exist a moment. Thus we see that, separately, either element of the air would kill us; O by excess and N by lack of action.

A mixture of fiery O and the inert N gives us the golden mean. The O now quietly burns the fuel in our stoves and keeps us warm; combines with the oil in our lamps and gives us light; corrodes our bodies and gives us strength; cleanses the air and keeps it fresh and invigorating; sweetens foul water and makes it wholesome; works all around and within us a constant miracle, yet with such delicacy and quietness that we never perceive or think of it until we see it with the eye of science.

Miscellaneous Editorial.

THE WAR OF ELEMENTS.

From the first, antagonism—the war of elements—has marked every stage of progress. The first light was flashed by the collision of primary elements as they came together at the fiat of the Almighty's will. The first day was the result of forcing into order these chaotic elements. The first matter was the solid rock formed from the fiery billows of those turbulent elements as "God moved" upon them. Thus it was that out of a war of elements came the beautiful atmosphere above us, and the solid firmament beneath our feet.

Then followed the long ages of preparation for life. It was the upheaving earthquake and the fiery volcano making diversity of surface and matter; it was the hissing mist and the great downfall of waters bursting, splitting and dissolving the hot surface rock into powder; it was the irresistible cataract plowing through these wastes, and the mighty hurricane scattering this debris which formed the fine grained earth and the fertilizing mold.

Then came the genial rain, the inspiring sunlight and God's gentle voice, saying, "Let there be life and there was life."

But long before man's fall—before he lived—life came by force, and life seized upon life for its support. The very life of the plant was that vital principle placed in the little thing we call seed, which, when put into the earth forced from the soil and the air those ingredients necessary for its growth, while in the great law of survival vegetable seized on dying vegetable for its nourishment. Animal life depended on these plants and devoured them for their own support, and animals fought animals in deadly conflict that they might live on the life of each other. When, finally, man was placed in the midst of all this strife, he was so constituted he could not live but as he ate that which had life.

And all this war of elements—this force against force—this strife of interests was for the world's progress.

Within us is a war of elements. We live by the death we cause, and all through our system it is the sustaining of life by the devouring of life. Death is but a change of elements—a change we force by seizing upon them for added life and growth.

There cannot be even a moral growth, without a fight with moral death. Virtue, the very essential of moral strength, comes of resistance, warfare, victory. The reason active virtue is better than passive innocence, is that it comes from a fight with evil.

So with the details of life. They are made up of contentions and

strife—that is, unless life is of that goodie sort which is neutral for either good or evil. Both in our individual progress, and in the world's onward movements—in our relation to society, and in society's purification and usefulness—it is a continual war of elements. It is first strife for necessities, then for superiority—now for that which makes life possible, then for all that gives life completeness, supremacy and happiness.

To be at rest is to die. Activity is the personification of life. It shows we are the victors over death. Thus life is a continued round of life and death struggles—life in death, and death in life—a conflict of the relationship of the elements made vital by force. Just as remorseless as is the edict "Dying thou shalt die," is it that the very entities which die within us, shall make life. Death of atoms comes from the mere moving of a muscle, the pulsation of the heart and even the exercise of a thought; without the death of these individual entities life would be impossible.

Education is but a series of mental conflicts. That boy or girl who can learn without striving to learn is of little worth. Those scholars who become scholarly by the hardest efforts are afterward our leading minds.

Place, power and wealth, given to us by birth, preferment, or accident, are seldom appreciated or retained. When they come by slow degrees of preparation through constant culture, indomitable will and undaunted perseverance, it is permanent.

In business we have this same war of elements, and he who pales before them is crushed. To the brave, who skills himself to the conflict and endures, is the victory.

TOO MUCH PHYSIC.

Is there not too much of a disposition on the part of the people to be physiced, and on the part of doctors to physic them to their heart's content? In the cure of "disease" have not most of us too little confidence in Messrs. Nature, Common Sense & Co.? We abuse ourselves by neglect, irregularities and excesses, and then run to the doctor for a cure! Better restore health—in fact, prevent losing it—by behaving ourselves. Even when we are in health, we do not seem to know it. Every trifling symptom which can be construed into "disease" must be dosed, as though it were a living monstrosity, with a yawning mouth ready for poison. If, by some misfortune we are free from imaginary symptoms, we still run to the doctor. Wonderful physic may prevent attacks from these rapacious "symptoms." Half of the doctors could turn their attention to other occupations if the people were not so crazed for physic; and most of the other half could

be dismissed if we were reasonable in the care of our bodies. To be sick is, generally, a crime, and to be cured is generally, to cease sinning. Yet like the confessional with the priest, men keep on sinning, expecting the doctor to give them absolution for a price; and, like the woman in the Scriptures, we spend all our substance, and are nothing better.

Dr. Holmes once said, "If the whole materia medica of the doctors, as now used, could be sunk into the bottom of the sea, it would be better for mankind, and all the worse for the fishes;" and the editor of the *Medico-Chirurgical Journal*, of London, once told a class of young medical graduates: "I verily believe if all the doctors and midwives and druggists and drugs were hurled from the face of the earth, there would be less sickness and less mortality among the people." Not that there are no medicines of value, and no physicians of skill; but that the overdosing with even good medicine, and the continual maladministration of injurious and poisonous substances, in their ill effects, counterbalance good results. Though there are honorable and skilful physicians, who consider only the welfare of their patients, there are others, so ignorant of the simplest principles of cure, so blundering in their selection of remedies, and so criminal in pampering to every whim of their patients, that it is astonishing their professional cloaks are not rent, that men may see their unworthiness, cupidity and wickedness.

But all physicians are exceedingly tempted, *for the people will have it so.* Though a physician may know a little rest or abstinence, or a change of diet, surroundings or climate, is the only need, unless he add medicine to his advice, he is called a strange doctor; and a still stranger one if he charges for his advice. Ten chances to one if the patient does not go from such a physician to one who will prescribe liberal potations and neglect every hygienic principle of cure. Such a patient may consider himself fortunate if, in his eagerness to have medicine, he does not fall into the hands of a charlatan who forthwith administers drastic depletives to reduce the vital standard of the system, declaring, "You must be made worse before you can be made better." One year after we had left college to practice medicine, we wrote to an intimate friend "of experience in the healing art," of our unexpected success with patients, and that our charges had not averaged ten dollars each. He wrote back a letter which then astonished us: "You cure your patients too quickly. You will never get reputation unless you have more who are *very sick*, and, after remaining quite low for a time, are brought up from the very verge of the grave with a good deal of attention, advice and medicine. As a rule, patients will not pay small bills; and they will call wholesome advice trifling attention unless accompanied with full doses of medicine." What a lamentable truth!

And dentists are tempted in the same way—to overdo the thing. A lady said to us the other day: "How often should my teeth be scraped?" She had beautiful teeth. "Not at all," was our reply. "Teeth in such a condition as yours require little attention more than a soft brush and cold water." "Why," said she, "my dentist persists in my visiting him at least every two months, and he always runs his sharp cutting scrapers down under my gums, till I come away with both gums and teeth sore; and almost always makes a bill for filling, under the plea that he must anticipate cavities."

In treating exposed pulps, or an ulcer, or an abscess, or Riggs's disease, etc., there is often excess of treatment. Even neuralgic pains and inflammations, and many other disorders, may often be better cured by hygienic treatment and rest than by physic; for they are often caused by undue exposure, a foolish spree, extreme physical labor, or exhausted nervous prostration. O, for more *common* sense!

WHAT ARE WE LEAVING OUR CHILDREN?

Ever and anon comes the repetition: rich parents, profligate children; hearty fathers and mothers, sickly progeny; energy, sagacity, success in the one, enervation, obtuseness and failure in the other. Thus the health, wealth, thrift and honor of one generation is followed in the next by weakness, poverty, squallor and dishonor.

Why? Why is it that so often children with no culture or opportunity—no inheritance or influential friends—nothing but their hard fists and harder necessities—pass the children of the rich in the great race of life? How is it they become so often our leaders in all departments of intricate business, professional dignity and influential politics? It cannot be that material, social, and intellectual advantages are injurious, nor that their absence is beneficial. But,

1st. Too often, our strife, as fathers for wealth and position is at the sacrifice of the proper attention we should give our children. They are positively neglected—a fatherly neglect which cannot be made up by teachers, or by masters, or even by mothers.

2d. By this exclusive attention to business, our moral tone becomes blunted, our hearts hardened, our tempers disordered and our whole nature selfish. As we are, so our children become. Then, what may have been tolerated in us because of our age, or usefulness, or wealth, is fatal in our children, and they become failures.

3d. We do not require of them vigorous, hearty work, thorough, useful study, and continual, uplifting self-dependence, and therefore do not give to them that constant discipline which alone can impart breadth, strength and maturity to their powers.

4th. In our children, we do not provide for the worst. We indulge and humor and pamper them, as children in whom restraint and

economy and something useful are not so necessary as in children of poverty; and so, when our property or we are gone, our children are helpless, and often "go to the bad."

Let us, therefore, be more careful to leave our children more worth than wealth—a worth of training, wisdom and skill—of moral principles, stern virtue and business character—of industry, perseverance and those elements of success which are of more value than much gold.

ALCOHOL AS AN ALIMENT.

Since the issue of the April ITEMS, containing criticisms of statements made by Dr. L. Ashley Faught in reference to Alcohol as an Aliment, we have had abundant proof from him that his assertions are sustained by many authorities as not "entirely untenable" or "grossly unscientific."

The object of his papers, is to present concise statements of physiological conclusions based upon a comparison of the opinions of advanced scientific minds—the work of one sufficiently educated, scientifically and otherwise, which could be accepted as good authority by the average reader, who is not able to own, or have access to large libraries, and the latest publications, or to enjoy personal contact with the leaders of scientific thought.

Dr. Faught desires us not to make any publication of his authorities, as at best they would only show that he was not writing any of his articles at random; and would *settle in no way* a controversy that has been going on for ages on this topic.

Being a temperance man, and a believer in total abstinence, this action on his part is prompted by a desire to suppress all deleterious inferences which might be taken from his "March" statements; and to stop a discussion which might lead others to emulate those infamous graces,—gin, swearing and tobacco.

A good variety of artificial teeth is essential in every dental office. We have seen exceedingly inappropriate teeth in mouths of patients coming from skilful dentists. When such dentists have been spoken to of the fact their only excuse has been, "Well, I was a little short of a variety then." Even where a dentist is near a dental depot, it pays him well to have a good variety of teeth in his own office. The first cost of stock is not more than three or four hundred dollars—two hundred dollars does pretty well—and when the variety this affords is once on hand, it does not cost more to keep up a variety than to be dependent for them on frequent and sometimes very inconvenient visits to the dental depots, or still more unsatisfactorily, to be obliged to send for teeth nearly every time a set is wanted.

It is impossible to select teeth in the absence of the patient as well as

when one and another of different size, shape and color can be placed in the mouth to see their adaptability.

Disagreeing with the ITEMS is not a serious offence. A subscriber writes us that, in the future, when he sees ideas in it he cannot adopt, he shall feel at liberty to reply to them. That is all right, of course, supposing them to be ideas of importance; for in minor things we all disagree. Even in important matters, perhaps, it is not well to dispute with all who disagree with us. We allow considerable latitude of expression. Why not? Why should we confine the ITEMS to such opinions as we can indorse? It is folly to expect it, and it would be a greater folly to pursue such a course.

But, while the freedom of expression should be maintained, would it do well to give place to any vagary or extreme? or to allow criticism without limit, discretion or importance?

Miscellaneous.

AN ACT TO REGULATE THE PRACTICE OF DENTISTRY IN THE STATE OF MISSOURI.

Be it enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1. It shall be unlawful for any person to practice dentistry or dental surgery in the State of Missouri without first having received a diploma from a reputable dental college or a university duly incorporated or established under the laws of some one of the United States or of a foreign government: *Provided*, That nothing in section 1 of this act shall apply to any *bona fide* practitioner of dentistry or dental surgery in this State at the time of the passage of this act: *And provided*, That nothing in this act shall be so construed as to prevent physicians, surgeons or others from extracting teeth.

SEC. 2. Every person who shall hereafter engage in the practice of dentistry or dental surgery in this State shall file a copy of his diploma with the clerk of the county court in the county in which he resides, and in the city of St. Louis with the city register, which copy shall be sworn to by the party filing the same, and the clerk shall give a certificate of such fact with the seal of the county court attached thereto to such party filing the copy of his diploma, and shall file and register the name of the person, the date of filing and the nature of the instrument, in a book to be kept by him for that purpose, and as a compensation for his services the said clerk for filing and registering the same shall receive a fee of one dollar, to be paid by the person filing the diploma.

SEC. 3. Every *bona fide* practitioner of dentistry or dental surgery

residing in this State at the time of the passage of this act and desiring to continue the same shall, within ninety days after the passage of this act, file an affidavit of the said facts with the clerk of the county court of the county in which he resides, or with the city register of the city of St. Louis, if he resides in the city of St. Louis; and the said clerk or register, as the case may be, shall register the name of, and give a certificate to, the party filing the affidavit, in like manner and of like effect as hereinbefore provided, and for such service shall receive a fee of one dollar, to be paid by the party filing the affidavit.

SEC. 4. All certificates issued under the provisions of this act shall be *prima facie* evidence of the right of the holder to practice under this act, which right it shall be incumbent upon the holder to prove under all prosecutions under this act.

SEC. 5. Every person violating any of the provisions of this act shall, upon conviction thereof, be deemed guilty of a misdemeanor, and be punished by a fine of not less than twenty-five nor more than two hundred dollars for each offense; and all fines so collected shall belong to and be paid into the common school fund of the county where the offense was committed.

The Dental Department of the University of California seems to have commenced its labor under flattering auspices. It is certainly a worthy movement for the Pacific Coast. They are bold enough to admit women, which cannot be said of every university—not even our Pennsylvania University. There is a little hope of the latter, however, for they have admitted the horse.

State Dental Societies meet as follows:
Nebraska, at Lincoln, third Tuesday in May.
Illinois, at Decatur, Tuesday, May 8th.
Georgia, at Atlanta, second Monday in August.
New York, at Albany, June 12.
Mississippi, at Jackson, May 8th.
Northern Ohio, at Sandusky, May 8th.
Texas, at Dallas, May 8th.
Iowa, at Iowa City, May 8th.

DEAR ITEMS:—From the first, you have attracted my inspiration by your plain, simple setting forth. Every thing is spicy and practical, and of real importance; and since putting on your new form you have become a gem of the first water.

E. F. WILSON, D.D.S.,

Rochester, New York.

THE IMPORTANCE OF BATHING.

It is related of the celerated, but eccentric, Dr. Abernethy, that upon one occasion a child was brought to him, suffering from some disease of the skin, it is true, but in a far worse condition from want of cleanliness. The Doctor, seeing at once that this latter misfortune was the cause of the former, said to the boy's mother, "I can soon cure your son, if you will strictly follow my directions. Get a large tub, fill it every day two-thirds full of warm water, put the little fellow into it, and then rub him all over with the best Castile soap, and a coarse towel."

"But, Doctor," exclaimed the astonished woman, "that would be giving my child a bath." "True," replied the physician, "it is open to that objection."

It is morally our duty to take the best possible care of the bodies with which we have been intrusted. The old saying, that "cleanliness is akin to godliness," finds no higher expression than in the proper use of baths.

The employment of baths goes back to the highest antiquity, and was indulged in almost to excess by the Greeks and Romans. So important are baths in warm countries, that the Jewish and Oriental religions enjoin frequent ablutions as a necessary part of the ceremonials of their creeds, thus, no doubt, largely contributing to the health and well-being of their devout desciples.

In order to understand the value of bathing, we must glance for a few moments at the anatomy and the physiology of the skin, which is, of course, the portion of our bodies chiefly interested in the process. In the first place, we have on the entire outer surface of the body a layer of membrane, like thin leather, called the epidermis; this stratum is not supplied with nerves, is therefore insensible, and constitutes the portion which rises up when the hands are blistered by rowing, for example, or when a fly-blister is applied. It is through it that pins are run in the common school-boy's trick of arming the fingers with their points. Just beneath the epidermis lies the true skin or corium, as it is called, a tough, strong membrane, richly supplied with blood-vessels and nerves. Hence, it bleeds and feels pain at the slightest cut or puncture, since even the finest needle cannot be thrust into it without wounding some little artery or vein, and some tiny filament of nerve. Under the true skin again lies the subcutaneous cellular tissue, which generally contains a good deal of fat.

The most important constituents of the skin to our present inquiry, however, are: 1st. The sweat-glands; 2d. The oil-glands, and 3d. The hair and nails, usually spoken of as appendages to the skin.

The sweat-glands are twisted and coiled-up tubes, occupying the true

skin and layer of tissue beneath. They open upon the outside of the epidermis, by immense minute openings called *pores*, so small as to be rarely visible to the naked eye. It is estimated that there are on an average, nearly 3,000 pores (each the mouth of a sweat-gland) to every square inch of the skin upon a human body, and that the total length of the hair-like tubes, forming the glands all over the surface of an ordinary sized man, is about twenty-eight miles. The effect of stopping twenty-eight miles of sewer-pipes, as those drainage-tubes of our systems may be denominated, can readily be imagined, and has been experimentally shown upon dogs by the cruel and quickly fatal process of varnishing them all over after cutting off all the hair. But even in very filthy people, the coating of dirt, oily matter from the oil-glands of the skin, saline materials from the perspiration, and epithelial scales from the epidermis, is never so dense as a coat of varnish, so that perspiration goes on through it, although much less efficiently than when the body is kept clean.

When we are at rest, the flow of perspiration, though constant, is seldom so free that it does not evaporate almost as rapidly as it exudes, so that the skin is only kept pleasantly moist; but, during exercise, especially in warm weather, the cutaneous surface becomes covered with drops of fluid. The evaporation of liquid from the skin has an important influence in retaining the body at its proper temperature of 98° Fahrenheit, and also in separating any excess of water which may have been taken into the stomach from the blood. Of course, when the pores of the skin are partly choked, so that they cannot do their work properly, some of this duty of purifying and regulating the volume of the blood is thrown upon certain internal organs, such as the liver, kidneys, or intestines; and should these happen to be weak, diseased, or already overtasked, serious disturbance may be quickly brought on throughout the whole system.

Now, these two agencies, namely, first, the local irritation of the skin by dirt, worn-out epithelial scales, dried perspiration, and exuded oily matter; and, second, the general derangement of health due to unwholesome blood, which is not purified as it should be, give rise to most of the troublesome and disgusting skin diseases which are not the results of contagion, or due to animal and vegetable parasites. Hence, the man or woman who will take the simple and delightful precaution of bathing often enough to keep the cutaneous surface in a good condition, may be almost sure of escaping a large class of skin diseases.

Having thus demonstrated, I trust, to my reader's full satisfaction, the inestimable value of frequent ablution of the skin, let us now consider the varieties of baths.

For purposes of cleanliness, the baths par excellence are those of warm water, this term being applied to those in which water of a tem-

perature from 70° to 80° is employed. Liquids of this degree of heat usually give a sensation of warmth, and therefore avoid the disadvantages of the shock to our system produced by a cold bath (that is, below 60°), and the excessive stimulation resulting from a hot bath, *i.e.*, one of 85° and upwards. Soap, or alkali ammonia, is necessary to remove the fatty matter poured out by the oil-glands already described, and for most people there is nothing better than the old-fashioned white Castile. Many persons are apt to remain too long in a warm bath, and care should be taken to avoid this mistake, which has a very debilitating effect if often indulged in.

The frequency with which a bath should be repeated varies somewhat with different individuals. Some there are whose skins exude a large amount of strong-smelling materials, for whom a bath twice daily, in warm weather, is almost a necessity; whilst others, whose skins are less active as common sewers for the impurities of the system, need only a daily or tri-weekly ablution. There is no doubt that bathing, like all other good things, may be carried to injurious excess, and I have often seen patients seriously impair their health by too frequent resort to the bath-tub. At the same time it is equally certain that by far the majority err in the opposite direction, and, as the records of hospitals for skin diseases testify, fail to yield sufficient obedience to the command, "wash and be clean." A safe rule, to which there are, of course, sundry exceptions, would be to bathe the whole body twice a week in winter and every other day in summer, gradually increasing this frequency to a tri-weekly washing in winter and a daily one in summer, if experience proves that better health is secured by such a habit.

It is very important to avoid being exposed to cool air after immersion in a warm bath, because mechanical obstructions to the outflow of perspiration from the pores being washed away, the amount of fluid poured out upon the skin, and consequently the cooling effect of evaporation from the cutaneous surface is greater, and the danger of becoming chilled much increased. The condition is accurately expressed by the popular saying that a warm bath "opens the pores," although the exact mechanism by which this opening is accomplished is not so generally understood. Hence it follows that the best time for bathing, with those who are in robust health, yet are liable to take cold, is in the evening, when they can go to bed at once, and so avoid all exposure for some hours afterwards. Invalids, however, and those who have delicate constitutions, will often find that they endure the exertion of taking a bath best about eleven o'clock in the morning, after digestion of the morning meal is accomplished, and yet before they are tired out with the fatigues of the day. Exercise after bathing is a good preventative against "taking cold," or becoming specially languid.

PHONETICS.

The following twenty characters are proposed mostly as additions to the ordinary letters, so as to make a phonetic alphabet of forty-three letters :

Ꮋ ɥ A a Ʌ ʌ Ǝ ə I i E e ʎ ʎ Ɔ ɔ O o U u Ɏ ɹ R r
*a*rm *a*nd *a*ir *ee*l *i*ll *e*ll *a*ll *o*ld *o*n *u*p *re* *er*

ʃ ʃ Ɯ ɯ Ɐ ɐ I ɪ Q q X x ʍ ʍ C c Ʇ ɟ ꞀI ɪ Ʞ ʞ Ʇ ʇ Ꞩ ꞩ.
t*o* t*oo* *a*le *i*le *oi*l *ow*l *u*se *ch*u *th*e *th*in *sh*e vi*s*ion si*ng*.

Ov kɔrs, it səmz kwɪt kwər tʃ sə letrz ɹɹɔn abxt sɔ ; but if ɔnli ɟis wil giv us a fonetik alfabet, iz it not obtɐnd veri cəpli ?

If wə kan ekspɹes evri sxnd ov xr laꞩgwɐj bɪ a distinkt cʌraktr wiɟxt gɔiꞩ xtsɪd ov xr pɹintr'ż kɐs, wə hav ɟe mənz ov immədiɐtli entriꞩ upon ɟis loꞩ sʎt ɹəfʎrm. Hɯ wil not sɐ ɟis wɯd bə a gɹɐt acəvment ? Fʎr hundɹedz ov yərz, wə hav bin səkiꞩ cʌraktrz hwic wil enɐbl us tʃ spel fɔnetikali. Hər ɟɐ ɥr ; wə hav fxnd ɟem sɔ nər wə ɥr srpɹɪzd wə did not sə ɟem sɯnr, and sɔ akseibl it iz ɔnli tʃ pik ɟem up and ʍz ɟem.

Ʇe Speliꞩ Ɏəfʎrm Asɔʞiɐʞun ov hwic Dr. Cɐs, ov St. Lʃis, iz pɹezident, ɥr tɹɪiꞩ tʃ ʍz sumhwʎt fɔnetikali, ɟe twenti-siks letrz az ɟɐ nx stand. Ʇis iz at best but a tempɔɹaɹi ekspədient. Ʇe fɔlɔiꞩ iz an eksampl, hwic hə sendz tʃ ɟe ꞀTEMZ.

To Fil Roots.—After the pulp is removed, clenz the canal with alcohol, and, before leting it get wet with saliva, wipe out the alcohol. While it is thus dry, fil the root with sandarak or shelak varnish, carying it in with fibrs of coton until the root is fuly pakt. Let the cavity reman open a wek, and then plug. The saliva wil extract the alcohol in the root, and a comparatively hard filing wil be the result. Exactly in this way hav I fild roots for very, very meni years. The smaulest canals wil be fild. The dentine tubes wil be clozed. It is aul hily satisfactory.

Apəriꞩ in ɟe alfɐbet abuv givn, ɟis wʃd ɹəd Ʇus :

Tʃ fil ɹʃts.—Aftr ɟe pulp iz ɹəmʃvd, klenz ɟe kanal wiɟ alkɔhol, and bəfɔr letiꞩ it get wet wiɟ salɪva, wɪp xt ɟe alkɔhol. Hwɪɪ ɪt iz ɟus dri, fil ɟe rɯt wiɟ sandaɹak or ʞelak vɥrniʞ, kʌriiꞩ it in wiɟ fɪbrz ov kotn until ɟe rɯt iz fʃli pakt. Let ɟe kaviti ɹəmɐn ɔpn a wək and ɟen plug. Ʇə saliva wil ekstɹakt ɟe alkɔhyl in ɟe ɹɯt and a kompʌrativli hɥrd filiꞩ wil bə ɟe ɹəsult. Egsaktli in ɟis wɐ hav ɪ fild ɹɯts fʎr veri, veri meni yərz. Ʇe smʎlest kanalz wil bə fild. Ʇe dentin tʍbz wil bə klɔzd. It iz ʎɪ hɪli satistaktɔi.

A ɹadikal ɹəfʎrm in speliꞩ iz undxtedli nəded. Wə ʞʃd not atempt tɪ ignɔr it. Xr pɹezent sistem—ʎr ɹatr xr wʎnt ov sistem—iz tɯ gɹɐt ɑ disgɹɐə tʃ bə endʍrd wiliꞩli. Wil ɟe dəvɪs hər givn ɹemedi it ? If it wil, kan eni wun sugjest a betr ? And, az fʎr ɟis, ɟe tɪp iz ʎlɹedi at hand, kan wə hav wun mɔr immədɪɐtli pɹaktiʞabl ?